RESEARCH

INTRODUCTION

The primary objective of fire research in the National Park Service is to provide information for making fire management decisions. Research plays a critical role in fire management programs by identifying area specific fire regimes; determining whether human activity has affected native ecosystems; developing techniques for predicting fire behavior; documenting and analyzing fire effects and other topics as needed. Research may also provide the framework needed to justify maintaining historic scenes, investigate techniques to create these scenes, and determine the impacts of fire control actions and management on cultural and natural resources.

Research serves to define the natural and aboriginal role of fire for use in formulating and implementing such fire use management actions as prescribed fires, suppression strategies and tactics, hazardous fuel abatement, and prevention measures. As NPS unit fire management plans are implemented and tested, additional research will inevitably be identified for such purposes as refining prescriptions, improving the understanding of fire behavior and fire effects, developing monitoring protocols, defining fire return cycles, describing fuels dynamics, describing the impacts on cultural and natural resources, threatened and endangered (T&E) habitat areas, etc. as well as other information needed for operational fire and resource management.

RESEARCH PROCEDURES

Identify Needs: All fire research needs must be identified in park resource management plans, fire management plans, and the Fire Management Program Center analyses or proposals. Project statements must be prepared to document the fact that sufficient information to address the resource problem is not available and that a research project is required to obtain that information.

Additionally, Fire Management Plans must identify any research needed to implement fire management objectives. Other supporting plans should also identify needed fire research.

Evaluation of existing literature and technology is an essential step in formulating fire management plans as well as research projects. In either case, exhaustive reviews of extant information on species affected or involved in the research is needed to determine what is already known that can be applied to the management or upon which further research can be

based. One means to do so is the Fire Effects Information System (http://www.fire.org/feis)if the species in question has been studied and entered (http//www.fs.fed.us/database/feis). Reviews of research in other fields of endeavor, such as fire history, fire behavior, etc., must be equally complete.

Care must be exercised when applying research findings from other geographic areas. Conditions and circumstances may need to be very similar between the research site and the area to which the findings are to be applied to be valid. A review of the current knowledge and technology must also serve to determine if research similar to that proposed has already been done or is currently underway. Reviews of plans and proposals by Cooperative Ecosystem Study Units (CESUs), regional offices, and/or the Fire Management Program Center should ensure the adequacy of the information review.

Before a decision is made to conduct manipulative fire research in an NPS unit, especially experimental burning, the park manager must determine that the same research objectives cannot be adequately studied on a timely basis on non-NPS lands. Since NPS units are preserves of nature or history, this decision must be taken very seriously. If experimental burning on the NPS unit is the only suitable means to gather needed information, those burns should be as small and few in number as needed to achieve statistically valid results.

Several avenues are available for conducting fire research in an NPS unit. If the unit has a resident research scientist with an expertise in fire, that scientist could undertake the study. Alternatively, a scientist stationed at a CESU or the regional office might be appropriate. If no expertise is available within the Service, an interagency agreement, a contract, or a cooperative agreement with a university or consulting firm can be pursued.

Whatever avenue is selected, the principal investigator must demonstrate through a research proposal that all members of the research team have the proper training and credentials to conduct fire research. The research proposal will conform in format to the DO-77 research proposal guideline or equivalent. Proposals will be peer reviewed under direction of an appropriate CESU NPS unit leader or regional office science coordinator and will be approved by the park manager. National Park Service funds will not be made available until these approvals are obtained. If outside funding is involved, the research cannot begin until the proposal is reviewed and approved as stated above.

The research proposal will specify the reporting requirements, which will include, at a minimum, annual progress reports and an approved final report with management recommendations. In addition, the researcher will meet with NPS unit staff before the research begins, once each year during the project, and at a final closeout session. The purpose of these meetings is to insure that all parties have a mutual understanding of the research objectives and to make adjustments as the study progresses. Open communication is critical to the success of the project. The researcher is encouraged to submit the results of the study to a refereed journal.

Implementation of research results and validation: Fire research is not complete until the results are applied to the fire management program. It is the responsibility of the park manager to provide management direction and arrange funding for implementation of research results. During the implementation phase, fire monitoring should verify whether the research results are valid or need adaptation or revisions. New project statements will be written if additional research is needed.

Fire managers working with research results should keep their respective regional offices and the Fire Management Program Center appraised of their findings. In turn, the Fire Management Program Center will disseminate initial results to other NPS units that may find this information useful in their fire management programs.

A prescribed fire plan must be prepared for every research burn. The plan must adhere to requirements of this guideline and be conducted by qualified personnel as specified in the NPS Wildland Fire Qualification System. The final decision to initiate a burn rests with the burn boss and not the researcher. The burn must comply with all applicable restrictions, regulations, and permit processes. The prescription must be explicit and will usually be expressed in terms of the upper and lower limits of fuel and environmental conditions needed to span the experimental range.

The burn boss is responsible for monitoring and documenting the burn using standards and procedures specified in the fire management and prescribed fire plans, while the researcher is responsible for recording study-specific observations and interpreting results. Close coordination between the burn boss and researcher is essential for the successful attainment of burn and research objectives.